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April 18, 2026

Dr. Steven Cliff, Executive Officer
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

cc: U.S. Environmental Protection Agency
Office of Transportation and Air Quality
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Request for Consideration — Lifecycle Emissions, Engine Durability, and the Structural Effect of Current Certification Rules on Independent Owner-Operators

Dear Dr. Cliff and CARB Staff,

I am writing as an independent owner-operator in the process of establishing a single-unit commercial trucking business, Kirkpatrick Motor & Transport, based in the Minneapolis-St. Paul metropolitan area with planned expansion to East Coast operations. In researching the long-term operational and regulatory landscape for my business, I have spent significant time studying the heavy-duty engine certification framework administered by CARB and EPA. In doing so, I have identified what I believe is a genuine structural gap in the way emissions regulation interacts with the realities facing independent operators and small-scale engine builders — a gap that appears to work against the emissions reduction goals the regulations are designed to achieve.

I am not writing to dispute the need for emissions regulation or to request an exemption from it. The reductions in heavy-duty diesel emissions achieved since 2010 are real, meaningful, and important for public health. I support the intent of the Truck and Bus Regulation, the Advanced Clean Trucks Regulation, and the Low NOx Omnibus. My

concern is narrower: I have found, through detailed technical and regulatory analysis, that the current framework creates outcomes that are legally compliant but operationally dirty, while simultaneously prohibiting pathways that would be operationally clean but not formally certified. The framework does not currently account for engine durability, aftertreatment lifecycle costs, regeneration fuel consumption, or the manufacturing emissions that attend replacement equipment — all of which are real emissions that affect the actual environmental outcome the regulations are designed to address. I would like to describe the problem as I understand it and ask whether CARB sees a path forward.

1. My Intent and Operational Context

My business is a single-truck owner-operator operation targeting LTL freight, FEMA emergency supply staging, and regional operations across the Midwest and East Coast. My projected annual mileage is approximately 40,000 miles. My business plan has been built deliberately around capital efficiency, DIY maintenance, and long-term reliability — factors that are critical for an independent operator without the resources of a fleet.

For a new operation at 40,000 miles per year, the economic case for a pre-2002 pre-emissions tractor is overwhelming. The acquisition cost is roughly one-third that of a 2016-or-newer emissions-equipped tractor. The engine platforms of that era — Cummins N14, Cat 3406E, Detroit Series 60 — are mature, well-documented, and supported by an abundant aftermarket. Annual operating costs are substantially lower due to the absence of DPF ash cycles, DEF consumption, SCR sensor replacements, and EGR cooler failures. For an owner-operator building from scratch, the pre-emissions platform is not a preference — it is a financial necessity. The same truck, run for the same miles with the same freight, costs roughly $15,000 to $25,000 less per year to operate during its first five years of ownership compared to an emissions-equipped alternative.

I do not intend to avoid emissions responsibility. I intend to operate a clean, well-maintained truck, to invest in available emissions improvements as my business grows, and to transition to a fully emissions-compliant platform at the point where my revenue and credit history support that transition economically. My long-term business plan includes operation in CARB-compliant states and eventual California access. The question is not whether I will operate cleanly — it is whether the regulatory framework provides a path for doing so during the establishment phase of an independent operation.

2. The Compliance-vs.-Emissions Gap

In studying the modification pathways available to improve the real-world emissions output of a pre-2002 engine, I have identified what I believe is a structural problem in how the certification framework treats modifications. I would like to describe this in detail because I believe it is not widely understood outside of regulatory and engineering specialist circles, and because it directly affects how an independent operator can approach compliance.

The current framework evaluates compliance based on the Engine Family Name (EFN) certified at the time of original manufacture. This is the identifier stamped on the engine dataplate and read by enforcement personnel during inspections. A truck's regulatory status is determined by the EFN of its engine, not by the truck's actual in-use emissions output. This is sensible from an enforcement perspective — configurations are verifiable while individual truck emissions are not — but it produces counterintuitive outcomes that work against the emissions reduction purpose of the regulations.

Outcome 1. A pre-2002 engine operating at its certified emissions level is legally acceptable for operation outside California, despite emitting approximately 20 times more NOx and 10 times more particulate matter than a current 2010+ engine. As this engine ages and its emissions degrade further in real-world use, it remains legally compliant until it fails a smoke opacity test at a specific inspection moment. The regulatory framework does not require improvement.

Outcome 2. If I, as the owner of that same engine, were to install current-generation aftertreatment equipment — DPF, SCR, DEF dosing, NOx sensors — and successfully reduce my actual emissions output to within 2 to 5 times of current standards (a dramatic improvement over the unmodified engine), I would become less legally compliant, not more. The modification would invalidate the engine's original certification without providing a new one. CARB enforcement, which reads the EFN on the dataplate, would classify the truck as a non-certified, modified configuration. I would be operating a cleaner truck and a less compliant truck simultaneously.

Outcome 3. The legal pathway to reconcile these outcomes — formal engine family certification of the modified configuration under 40 CFR Part 1036 — requires documented dynamometer testing on EPA-approved facilities, deterioration factor demonstration, and application fees that together cost approximately $150,000 to $500,000 per engine family. This pathway is not accessible to an individual owner-operator. It is not accessible to small engine rebuilders. It is not accessible to independent repair shops. It is, in practical terms, available only to manufacturers operating at production scale.

The cumulative effect of these three outcomes is that the current framework actively discourages independent operators from pursuing operational emissions improvements. An owner who invests in a certified retrofit DPF/SCR system, pays $15,000 to $25,000 for the installation, and achieves documented emissions reductions approaching current standards is rewarded with regulatory uncertainty rather than regulatory recognition. An owner who does nothing continues operating at 20 times the current NOx standard with full legal standing. The incentive structure points in the wrong direction.

3. The Independent Operator and Right-to-Repair Problem

This structural gap is not merely academic. It has specific, concrete effects on the community of independent operators and small engine builders who have historically kept the American trucking industry running outside of large-fleet operations.

An independent owner-operator running a pre-emissions Peterbilt, Kenworth, or Freightliner cannot, under the current framework, achieve California compliance through any economically rational pathway. The options available are: (1) operate outside California and accept the permanent loss of a major freight market; (2) purchase a 2010-or-newer emissions-equipped truck, which during the establishment phase of a business requires financing that is often not available; or (3) invest in modification pathways that improve real emissions but do not change regulatory status. Each of these options preserves the current structure — in which the cleanest-running older truck an independent can build remains non-compliant — while the highest-emitting older truck that the owner chooses not to improve remains compliant in every state except California.

Small engine builders and independent repair shops face a related problem. The right-to-repair and right-to-rebuild traditions in heavy-duty trucking depend on the ability to service, rebuild, and improve engines throughout their useful life. Under the current framework, rebuilding a pre-emissions engine with modern internal components is permitted because it does not change the certified configuration. But improving the same engine's emissions performance by adapting current-generation aftertreatment is effectively prohibited because it changes the configuration without establishing a new one. The regulation rewards maintenance at the original emissions level and penalizes improvement.

This outcome is particularly difficult to reconcile with the broader policy goal of emissions reduction. If the regulatory framework were genuinely designed to minimize total emissions from the national fleet, it would create incentives for independent operators to improve the engines they are realistically going to operate for the next decade. Instead, it creates disincentives. The owner who invests in real emissions reduction gets regulatory risk as a reward. The owner who maintains original emissions gets regulatory acceptance.

4. Why Engine Durability Is an Emissions Argument

In studying which engines to build my operation around, I have been drawn specifically to the Caterpillar platform. I want to explain why, because this is not a sentimental preference or a matter of brand loyalty — it is a reasoned decision that connects directly to the emissions reduction argument this letter is making.

The pre-emissions Caterpillar 3406E and early C15 engines (6NZ, MBN serial prefixes) have documented real-world service lives exceeding 1.2 million miles with one mid-life overhaul. Fleet operators routinely report 1.5 million miles between major rebuilds on these platforms. This durability is not marketing language — it is a measurable engineering reality produced by Caterpillar's design choices around block strength, bearing surface area, oil capacity, cooling capacity, and fuel system architecture. The 3406E and its C15 derivatives were built to a heavier standard than most competitors,

and that standard produces measurable longevity. The Detroit Series 60 and Cummins N14 share this characteristic; they are also engines that routinely outlast multiple chassis.

An engine that runs for 1.5 million miles is, from a cumulative lifecycle emissions perspective, a cleaner engine than one that runs 600,000 miles before requiring replacement — even if the shorter-lived engine has lower emissions per mile. The manufacturing of a heavy-duty diesel engine is itself an emissions event. Steel production, casting, machining, and transportation of a new engine or engine block represent substantial embodied carbon and particulate emissions that do not appear on the tailpipe but are real nonetheless. When a less durable engine requires replacement, the emissions of manufacturing the replacement engine must be accounted for against the operational emissions savings. When a more durable engine avoids replacement, it avoids those manufacturing emissions entirely.

The same logic extends to the aftertreatment systems on current emissions-compliant engines. A DPF that requires replacement every 200,000 to 300,000 miles is itself an emissions cost — the manufacturing of replacement DPFs, the transportation, the disposal of the used unit. An SCR catalyst that degrades and requires replacement represents the same cost. An EGR cooler that fails and is replaced, and the coolant, labor, and parts that attend that failure, are all emissions events that do not appear in per-mile certification numbers but are real in cumulative terms.

The 2010-certified truck that operates cleanly for 500,000 miles and then requires $15,000 in aftertreatment rebuilding — or more commonly, is retired and scrapped because the rebuild exceeds the truck's value — has not actually produced lower cumulative emissions than a pre-emissions truck that operates for 1.5 million miles with straightforward mechanical maintenance. It has produced lower per-mile tailpipe emissions during its operating life, which is genuinely valuable. But the lifecycle accounting is more complex than the per-mile figure suggests.

5. The DPF Regeneration Emissions Problem

A specific technical reality of current aftertreatment systems deserves attention in any serious discussion of emissions policy. Diesel particulate filter regeneration — the periodic burn-off of accumulated soot — is itself an emissions event. Active regeneration requires the engine to inject additional fuel into the exhaust stream to raise DPF temperatures to roughly 600 degrees Celsius. This fuel is burned but produces no useful work, and its combustion products enter the atmosphere.

Under ideal operating conditions — long highway runs at moderate load — DPF regeneration is infrequent and the fuel cost is manageable. Under the operating conditions many independent operators actually face — urban delivery, dock work, short-haul runs, extended idling for climate control or loading — DPF regeneration becomes frequent and the fuel cost becomes substantial. Industry documentation of the early DPF era (EPA 2007 engines) records owners burning hundreds of gallons of fuel annually solely to

regenerate their DPF systems, with some reports exceeding two thousand gallons over the life of a single truck. This fuel produces real CO2, NOx, and particulate emissions that never appear in the certification testing because certification testing does not reflect the duty cycles the trucks actually operate on.

Engines with reliable aftertreatment systems (mature 2016+ platforms) have significantly reduced this problem through better regeneration management. Engines with problematic aftertreatment systems (the 2007–2009 DPF-only era, the EGR-only MaxxForce / CT-series platforms) continue to demonstrate high regeneration fuel penalties and chronic aftertreatment failures. A truck with chronic DPF problems can consume more fuel and produce more actual emissions than a well-maintained pre-emissions engine on the same routes, while remaining more "compliant" under the current framework.

The regulatory framework does not currently account for these lifecycle and operational realities. A 2010-certified engine that consumes 300 gallons per year in regeneration fuel is evaluated identically to a 2010-certified engine that consumes 30 gallons per year in regeneration fuel — both are compliant. A pre-emissions engine that consumes zero regeneration fuel and operates within its certification for 1.5 million miles is non-compliant regardless of its actual output or lifecycle efficiency.

6. Why a Cat-Based Build Specifically

This lifecycle framework is why my business planning has focused on building around a Caterpillar platform. The pre-emissions 3406E and early C15 engines offer a combination of characteristics that no post-2010 engine matches:

- **Documented 1.2–1.5 million mile service life** with one overhaul, representing minimized manufacturing emissions over the truck's operational span.

- **No aftertreatment system to fail, degrade, or require replacement** — eliminating an entire category of recurring emissions and resource consumption.

- **Simple mechanical systems serviceable by independent shops and owner-mechanics** — reducing the economic pressure that forces early retirement when aftertreatment costs exceed truck value.

- **Compatibility with current Ultra-Low Sulfur Diesel and biodiesel blends** — the engines run measurably cleaner today on modern fuel than they did at original certification, even without modification.

- **A pathway for further emissions improvement through modern aftertreatment adaptation** — the same Caterpillar industrial C15 platform currently produces engines with complete DOC/DPF/SCR/DEF aftertreatment that meets EPA Tier 4 Final standards, providing a real-world demonstration that Cat engine architecture is fully compatible with current emissions technology.

If I could adapt modern aftertreatment components — either from the current industrial C15 or from equivalent sources — to a pre-emissions 3406E or C15 block, and demonstrate through testing that the resulting engine meets or approaches current emissions standards, I would be building the most environmentally efficient truck that my budget and capabilities can produce. I would be combining the durability of a proven engine platform with the emissions performance of modern aftertreatment technology. The cumulative lifecycle emissions of that truck — accounting for manufacturing, aftertreatment service, durability, and operational output — would be competitive with or better than a new 2026 truck purchased off a dealer lot, particularly at my projected mileage.

Under the current regulatory framework, that truck is not California-compliant regardless of its actual emissions performance.

7. The Structural Pattern This Creates

I want to raise a difficult question carefully, because I recognize it cuts close to questioning the motivations of the regulatory framework, and I do not wish to impugn the good faith of CARB or EPA staff. But the outcomes I have mapped in this letter form a pattern that deserves honest examination:

- The current framework makes California operation economically inaccessible to independent operators with pre-emissions equipment, regardless of that equipment's actual emissions performance.

- The framework provides no pathway for an independent operator to improve a pre-emissions engine to California compliance at any cost short of the $150,000–$500,000 manufacturer-scale certification investment.

- The framework accepts trucks with aftertreatment systems that are demonstrably degraded, consuming excess regeneration fuel, and producing emissions well above certification levels — as long as the EFN on the dataplate matches a 2010+ certified family.

- The framework does not account for engine durability or lifecycle emissions, treating a 1.5-million-mile engine and a 500,000-mile engine as equivalent on emissions terms despite the substantial manufacturing emissions differential.

- The framework directs independent operators who cannot afford 2016+ equipment toward either operating outside California or exiting the industry, while allowing large carriers with fleet purchasing power to continue operating in California on the same timelines.

Viewed individually, each of these outcomes can be explained as an artifact of how regulations must be written — configuration-based compliance is enforceable, lifecycle accounting is complex, independent operators are a small share of the fleet, and so on.

Each explanation is defensible in isolation. But viewed together, the pattern produces an outcome in which the regulations function less as an emissions reduction framework and more as a market access framework. Trucks that emit cleanly cannot operate in California unless they also satisfy an administrative compliance burden that independent operators cannot meet. Trucks that emit poorly can operate in California as long as they satisfy the administrative burden.

If the goal of emissions regulation is emissions reduction, the framework should reward the cleanest actual emissions regardless of who produces them. If the outcome is that only large carriers and manufacturers with certification resources can participate in the California market, the framework is effectively regulating market access rather than emissions. That is a meaningful distinction, and I believe it is a distinction CARB is capable of recognizing and addressing.

I am not asserting that this outcome is intentional. I am observing that it is the outcome the current framework produces, and that the framework could be restructured to produce different outcomes while maintaining or improving its emissions reduction effectiveness.

8. The Caterpillar-Specific Technical Picture

To make the structural problem concrete, consider the specific situation for someone who wishes to build or maintain a Cat-powered truck while operating cleanly. Caterpillar exited the U.S. on-highway engine market in 2009 rather than develop an EPA 2010-compliant engine with SCR aftertreatment. Since that exit, Caterpillar has continued to manufacture the C15 engine for industrial and off-highway applications, and the current industrial C15 includes a complete, modern, EPA Tier 4 Final-certified aftertreatment package — DOC, DPF, SCR, and DEF dosing — that meets or exceeds on-highway 2010 emissions standards.

The current framework provides no pathway forward for an operator who wishes to combine the durability advantages of a Cat platform with modern emissions performance:

- **The pre-emissions C15 (6NZ, MBN, MXS)** is not certified to 2010 standards and has no pathway to become so without manufacturer-scale certification investment.

- **The industrial C15** is certified for nonroad applications only; its certification does not transfer to on-highway use even though the engine is mechanically and emissions-wise identical to what would be required for on-highway compliance.

- **A hybrid configuration** — pre-emissions C15 block rebuilt with current industrial C15 aftertreatment — would produce emissions approaching current standards, but would invalidate both source certifications and would not carry a valid EFN for either on-highway or nonroad use.

- **The CT15 vocational engine** (a Navistar MaxxForce 15 variant with a Cat-derived block, rebadged and sold through Cat Vocational Truck from 2011 to 2016) is 2010+

on-highway certified but was built with EGR-only NOx control and has documented reliability problems. A CT15 owner who upgrades the aftertreatment to the SCR-based system Navistar itself eventually adopted — improving both reliability and emissions — cannot do so with clear regulatory standing.

The result is that a class of engines with substantial installed base, documented industry-leading durability, and clear technical pathways to modern emissions performance sits outside the regulatory system. Not because the engines cannot run clean, but because the certification framework does not contemplate owner-level modification with recognition. An independent operator who wishes to invest capital, skill, and engineering effort in producing the most environmentally efficient truck possible within the Cat platform cannot do so in a way that produces a California-compliant result.

9. The Decision Matrix I Actually Face

I want to describe the decision I am actually making as I plan my business, because I believe it illustrates the real-world effect of the current framework more clearly than any abstract argument. As someone who has spent significant time studying the options, I have identified four realistic pathways for acquiring a Phase 1 tractor. I would like CARB to understand that each of these pathways produces an outcome that is worse for emissions than what I would choose if the regulatory framework allowed it:

Option 1: Pre-emissions Cat or comparable platform, operated outside California. Acquisition cost is reasonable ($25,000–$35,000). Engine durability is excellent; the truck can reasonably be expected to serve 1.2 million miles or more. No aftertreatment to maintain, replace, or dispose of. Low total lifecycle resource consumption. The truck will emit at pre-emissions levels — approximately 20 times the current NOx standard — but can operate reliably for a decade or more without adding manufacturing emissions for replacement equipment. Under this option, I structure my business to avoid California entirely, contributing nothing to California freight capacity and capturing none of the California market. California receives no benefit from my operating decisions; it simply does not see my truck.

Option 2: Mid-era emissions-equipped truck (2010–2015) with documented aftertreatment concerns. Acquisition cost is moderate ($40,000–$55,000). These trucks satisfy California's 2010+ requirement. But the aftertreatment systems in this generation — particularly the EGR-heavy approaches used by MaxxForce and some Navistar variants — have documented reliability problems, chronic DPF regeneration issues, and often already sit in the expensive rebuild window. Purchasing this option means buying into known aftertreatment failures, which will generate real emissions through replacement component manufacturing, regeneration fuel consumption during chronic regen cycles, and early retirement when rebuild costs exceed truck value. This option allows California operation but produces worse lifecycle emissions than Option 1.

Option 3: Mature emissions-equipped truck (2016+). Acquisition cost is substantial ($65,000–$100,000+). These trucks have the best aftertreatment reliability and reasonable emissions performance. They are also economically inaccessible to an independent operator establishing a new business without a revenue history, credit foundation, or collateral. Financing is difficult and expensive for a first-time owner-operator. The cost differential between Option 1 and Option 3 is approximately $40,000–$65,000 — effectively the first two years of operating margin for a single-truck business. This option is available to large fleets with capital access; it is largely unavailable to the independent operators the current framework also expects to comply.

Option 4: Build a modernized pre-emissions truck with current aftertreatment and operate it in California. This is what I would choose if the regulatory framework allowed it. Acquire a pre-emissions Cat 3406E or early C15 with documented durability. Rebuild the engine to factory-fresh internal condition. Adapt current-generation aftertreatment — DOC, DPF, SCR with DEF dosing — from the industrial C15 or equivalent source. Verify real-world emissions output through in-use testing. The resulting truck would combine the durability advantages of the pre-emissions platform (low manufacturing emissions, 1.5 million mile service life) with the emissions performance of current aftertreatment technology. Lifecycle emissions of this truck would likely be lower than any of the other three options. This option is not available under the current regulatory framework at any cost accessible to an independent operator.

When I describe these four options to people outside the heavy-duty trucking industry, the response is almost always the same: the framework is producing worse outcomes than it is designed to produce. I am choosing between operating a dirty truck outside California, operating a problematic emissions truck in California, not operating at all until my business can afford a $100,000 truck, or building the cleanest possible truck and being prevented from operating it in California. None of these outcomes reflect the emissions reduction goals that CARB and EPA have articulated. The framework is producing a set of options that all perform worse than what the framework ostensibly seeks to encourage.

I am making this decision as a single operator. But variants of this decision are being made across the country by thousands of independent owner-operators, small fleet operators, and small engine builders. The aggregate effect of all those decisions is real. If the framework is producing worse outcomes at the individual level, it is producing worse outcomes at the aggregate level. And the aggregate outcome is the one CARB's mission is ultimately measured against.

10. A Concrete Proposal: The In-Use Emissions Compliance Pathway

I want to offer a specific proposal that I believe addresses the structural problem described in this letter while preserving and strengthening the emissions reduction outcomes CARB is working toward. I am not suggesting this is the only solution, or

that it is fully developed. I am offering it as a starting point for what a better framework might look like — one that rewards actual emissions performance rather than administrative compliance.

The Proposal in Summary

Establish a California In-Use Emissions Compliance Pathway for heavy-duty trucks that operates in parallel with the existing Engine Family Name-based certification system. Under this pathway, a truck that does not carry a 2010+ certified EFN can achieve California operational compliance by demonstrating, through documented in-use emissions testing, that its actual emissions output meets or approaches current standards. The testing would use the existing Portable Emissions Measurement System (PEMS) infrastructure that CARB already employs for in-use compliance verification, and would be conducted at CARB-approved facilities on a duty cycle representative of commercial operation.

How the Pathway Would Work

- **Eligibility.** Any on-highway heavy-duty truck with a modified or adapted emissions system, regardless of original EFN, could apply. This includes pre-emissions engines with retrofit aftertreatment, rebuilt emissions-era engines with upgraded aftertreatment, and hybrid configurations combining pre-emissions blocks with current-generation emissions components.

- **Testing requirements.** Documented PEMS testing at a CARB-approved facility, measuring NOx, PM, CO, and HC output over a standardized duty cycle. A truck qualifying for compliance would need to demonstrate emissions output within a defined multiple of current standards — for example, within 3x current NOx and 2x current PM as an initial threshold, tightening over time as the framework matures.

- **Documentation and recognition.** Qualifying trucks would receive a CARB-issued In-Use Compliance Certificate, valid for a defined period (perhaps two or three years), with periodic re-verification. The certificate would be recognized for CARB Truck and Bus Regulation compliance, functioning in parallel with the current EFN-based certification.

- **Cost structure proportionate to operator scale.** Testing and documentation fees scaled to the individual operator, not the manufacturer-scale certification cost structure. Target total cost in the range of $2,000–$5,000 per truck per certification period — comparable to what independent operators already spend on compliance-related documentation and testing.

- **Anti-tampering integration.** Certificates automatically void if the truck fails a subsequent Clean Truck Check inspection or if the emissions system is modified after certification without re-testing. This preserves enforcement integrity while rewarding demonstrated performance.

Why This Serves Emissions Reduction Better Than the Current Framework

It rewards actual emissions performance rather than administrative compliance. A truck that actually emits cleanly becomes operationally recognized as clean, regardless of its paper certification.

It creates economic incentives for independent operators to invest in emissions improvements. The current framework provides no financial return for retrofit investment because the EFN does not change. An in-use compliance pathway creates a direct return: invest in the upgrade, pass the test, access the market.

It accounts for real-world operational conditions that certification testing does not. PEMS testing on representative duty cycles captures the actual emissions the truck produces, including the effects of maintenance quality, operational profile, and aftertreatment condition. This is a more accurate measure of environmental impact than certification testing performed on new equipment.

It does not weaken existing certification standards. The 2010+ EFN-based certification pathway continues to operate unchanged for new engines and manufacturers. The in-use pathway is additive, providing an alternative for the installed base of older equipment and for modified configurations.

It creates a legitimate market for emissions retrofits and adaptations. Currently, there is no market for high-quality emissions retrofits because there is no pathway to regulatory recognition. An in-use compliance pathway creates immediate demand for certified retrofit services, supporting small engine builders and specialty shops that can deliver documented emissions improvements.

It positions California ahead of the coming regulatory shift toward in-use enforcement. The 2027 EPA rules and CARB's own Low NOx Omnibus are already moving the regulatory framework toward in-use testing and performance. Establishing an in-use compliance pathway now puts California ahead of this curve rather than being dragged along by it.

Precedent and Feasibility

This proposal is not without precedent. CARB already operates an Alternative Control of Emissions (ACE) plan framework for commercial harbor craft, under which owners can demonstrate compliance through alternative strategies that achieve equivalent or greater emissions reductions than the prescribed standards. The heavy-duty on-highway sector does not currently have a parallel mechanism, but the regulatory architecture exists within CARB's authority. The infrastructure for in-use testing exists through Clean Truck Check and PEMS programs. The concept of performance-based compliance as an alternative to configuration-based compliance is established in other CARB programs.

An in-use emissions compliance pathway would extend this established regulatory principle into the heavy-duty on-highway sector. It would not require new legislative authority. It would not require weakening existing standards. It would require

administrative effort to define the testing protocol, approve the testing facilities, and establish the documentation framework — but these are tractable problems that CARB staff are well-equipped to address.

What This Pathway Would Mean for My Decision Matrix

Under the in-use compliance pathway, my decision matrix would become meaningfully different. Option 4 — building a modernized pre-emissions truck with current aftertreatment — would become viable. I would invest capital and engineering effort in producing a truck with documented emissions performance approaching current standards. I would submit that truck for testing. I would receive a compliance certificate. I would operate that truck in California, contribute to California freight capacity, and pay California taxes. The emissions performance of my operation would be meaningfully better than any of the other options I am currently considering. California would receive the benefit of a cleaner truck entering its market; I would receive the benefit of market access; and CARB would receive the benefit of a more effective emissions reduction framework.

This is the kind of outcome emissions regulation should produce. It is an outcome the current framework does not produce. I believe it is an outcome CARB can choose to produce, through a framework extension that builds on existing regulatory principles and infrastructure.

11. Request for Consideration

I am not writing to request a waiver, an exemption, or a special accommodation. I am writing because I believe CARB and EPA are genuinely the agencies best positioned to recognize this structural gap and to consider whether the long-term purpose of emissions regulation would be better served by framework adjustments that align configuration-based compliance with outcome-based performance.

Given the proposal outlined in Section 10, I would respectfully ask CARB to consider the following questions as part of its ongoing regulatory development work:

First. Would CARB consider developing an In-Use Emissions Compliance Pathway along the lines described in Section 10, or a comparable alternative, to provide independent operators with a viable route to California compliance for modified and adapted heavy-duty equipment? The proposal builds on existing CARB infrastructure and regulatory principles. It does not require new legislative authority. It does not weaken existing standards. It creates measurable emissions reduction outcomes that the current framework does not produce.

Second. Is there an opportunity to develop a lifecycle emissions accounting framework that incorporates engine durability, aftertreatment replacement cycles, regeneration fuel consumption, and manufacturing emissions into compliance evaluation? The current per-mile certification framework does not reflect cumulative environmental impact. A

lifecycle framework would produce results more consistent with the actual emissions reduction goals CARB is pursuing, and would appropriately reward the durability characteristics that distinguish heavy-duty platforms like the Caterpillar 3406E and early C15 from shorter-lived alternatives.

Third. Is there an opportunity to establish a streamlined pathway for heavy-duty engine modification certification, accessible to small-scale manufacturers and independent repair operations, with documentation requirements proportionate to the risk of non-compliance? The current $150,000 to $500,000 certification barrier is appropriate for a manufacturer submitting a new production engine family. It is not proportionate to a specialty retrofit kit or a custom aftertreatment adaptation intended for a specific, limited engine population.

Fourth. Is there an opportunity to establish a recognition framework for certified retrofit and adaptation systems that sit between full new-engine-family certification and unregulated modification? An expanded version of the existing CARB Verified Technology list, covering novel adaptations of OEM components rather than only pre-validated kits, would provide independent operators with a legible regulatory pathway that does not currently exist.

Fifth. Would CARB consider engaging with the community of independent owner-operators and small engine builders on this topic directly? The framework under which we operate has been shaped largely by manufacturer input and large-fleet priorities. The technical realities of single-truck operations and the economics of small-scale emissions modification are not well represented in current rulemaking. A formal stakeholder engagement process focused on these operators could surface constructive pathways that are not visible from the manufacturer-facing perspective.

12. Closing

The core argument I am making is not that emissions regulation should be weakened. It is that the regulatory framework should reward actual emissions reduction rather than administrative compliance, and that the current framework does the opposite for the class of operators most likely to be operating older equipment for the longest time. If CARB's goal is to minimize cumulative emissions from the California and national fleets — which I believe it is — then the framework should account for engine durability, aftertreatment lifecycle costs, and real-world operational emissions. It should provide pathways for independent operators to contribute to emissions reduction rather than excluding them from it. And it should evaluate its own outcomes against the purpose for which it exists: cleaner air, not more regulated markets.

I am a single independent operator raising a concern that I believe affects a much larger community. The durability and reliability of Cat, Cummins, and Detroit pre-emissions platforms represent an installed base of hundreds of thousands of engines with remaining service life measured in decades. How the regulatory framework treats that installed base

— whether it creates pathways for improvement or forces either non-compliance or retirement — will have substantial cumulative effects on actual emissions in both California and the broader national fleet. I would welcome the opportunity to discuss this analysis in more detail with CARB staff, to contribute to any public comment processes where this topic is relevant, and to support CARB's efforts in whatever way is useful to the development of a framework that better serves the intent of emissions reduction.

Thank you for your time and for the work CARB does in advancing air quality for California and for the country. I look forward to any response or guidance you are able to provide.

Respectfully,

Quinton Kirkpatrick

Owner-Operator, Kirkpatrick Motor & Transport